In Focus

a photo guide to today's Idaho National Laboratory

Idaho National Laboratory

Introduction

Concerns about greenhouse gases, growing energy demand, resource affordability and energy security are driving a national quest for science-based, sustainable solutions. In keeping with their charter to lead high-priority, high-risk research, the U.S. Department of Energy's national laboratories are being looked to for answers. And while all the labs have complementary and crucial roles to play, none is more engaged than Idaho National Laboratory. That's because INL's mission is to ensure the nation's energy security with safe, competitive and sustainable energy systems and unique national and homeland security capabilities.

To carry out this mission, INL leverages its unmatched combination of scientific and engineering expertise and unique facilities. This guide provides a visual introduction to some of the lab's more significant individual facilities, which are spread across INL's three primary operating areas – the Advanced Test Reactor Complex, the Materials and Fuels Complex and the Research and Education Campus. These operating areas and all their associated facilities represent an asset value of roughly $3.5 billion.

INL Physical Assets at a Glance

Three primary operating areas

- REC in Idaho Falls
- ATR Complex and MFC at remote INL Site, 25 miles west of Idaho Falls

Remote, secure INL Site covers nearly 890 square miles

- 177 miles of paved roads
- 14 miles of railroad lines
- 111 miles of isolable electrical transmission & distribution lines
- A full complement of utilities and support services

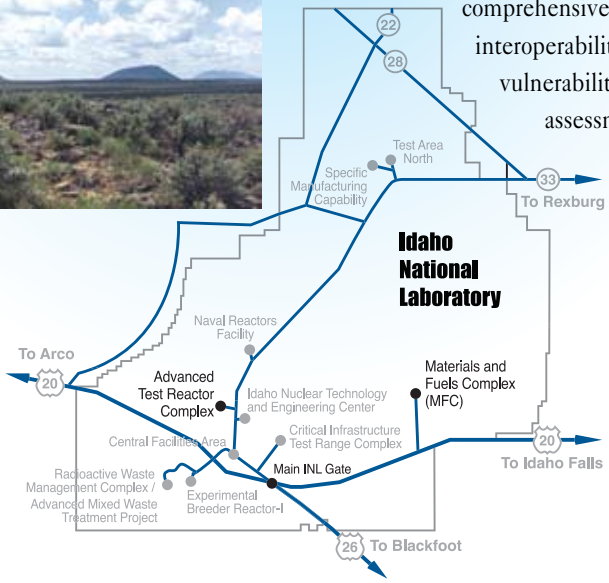
Site Facilities

The two primary operating areas on the INL's expansive desert operations site are the Advanced Test Reactor Complex and the Materials and Fuels Complex.

The primary focus of the ATR Complex is continued operation of the Advanced Test Reactor – the nation's premier resource for fuels and materials irradiation testing, nuclear safety research and nuclear isotope production. The ATR Complex is considered essential for the development of the next generation of advanced, safer, more efficient and proliferation-resistant nuclear reactors.

Projects at MFC primarily focus on developing innovative solutions for nuclear power technology, including nuclear fuel development, separations development, post-irradiation examination and fast reactor development. Other projects at MFC support training for the Department of Homeland Security, space nuclear research and processing for the National Aeronautics and Space Administration and other research involving commercial interests.

Though not pictorially represented in this guide, the desert operations site also hosts the Central Facilities Area, which is home to fire, emergency medical, transportation and related support services, and the Critical Infrastructure Test Range Complex, which provides customers with access to isolated, secure space complete with industrial-scale infrastructure components that can be used for conducting comprehensive interoperability, vulnerability and risk assessments.



Advanced Test Reactor Complex

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Advanced Test Reactor Complex

Advanced Test Reactor
Advanced Test Reactor-Critical Facility
Safety and Tritium Applied Research Facility

Advanced Test Reactor

The Advanced Test Reactor (ATR) is the nation's most powerful and versatile materials test reactor, able to support basic and applied research for light water reactor life extension, as well as next generation reactor and advanced fuel cycle development.

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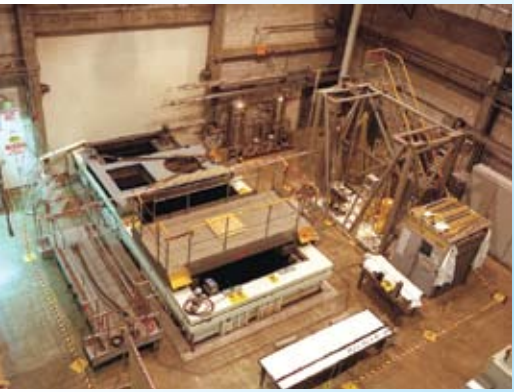
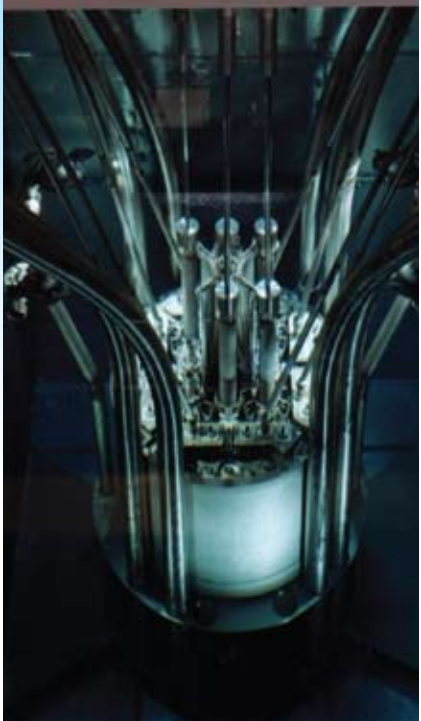
ATR-Critical Facility

The ATR-Critical Facility (ATR-C) is a full-size, low-power, pool-type nuclear replica of the Advanced Test Reactor, designed to evaluate prototypical experiments before the actual experiments are irradiated in the ATR. Its normal operating power level is about 100 W with a maximum power rating of 5 kW.



ATR-C

ATR-C control



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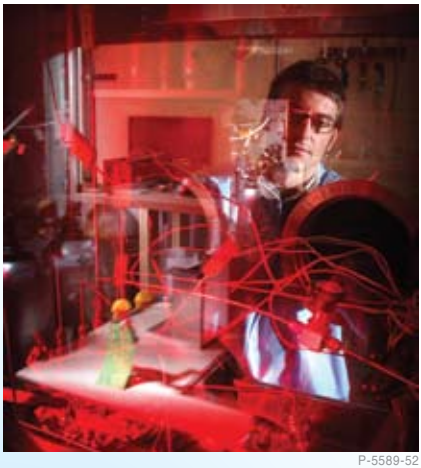
Safety and Tritium Applied Research Facility

The Safety and Tritium Applied Research (STAR) Facility comprises capabilities and infrastructure to support both tritium and nontritium research activities at both bench and engineering scales important to the development of safe and environmentally friendly fusion energy.



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Materials and Fuels Complex

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Materials and Fuels Complex

Analytical Laboratory
Hot Fuel Examination Facility
Fuel Conditioning Facility
Fuel Manufacturing Facility
Space and Security Power Systems Facility
Transient Reactor Test Facility

Analytical Laboratory

The Analytical Laboratory houses shielded hot cells, air and inert atmosphere glove boxes, casting laboratories and related assets used for nuclear fuels and materials characterization, environmental sampling and analysis and other examination tasks.

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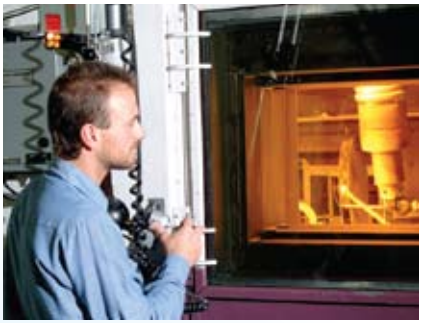
Fuel Conditioning Facility

The Fuel Conditioning Facility (FCF) contains two adjacent hot cells, a mock-up area and shielded decontamination and repair area that support legacy spent fuel treatment, remote equipment development, cask receipt and related activities.



FCF Cell

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Fuel Manufacturing Facility

The Fuel Manufacturing Facility (FMF) features a highly secure vault and two work rooms with glove boxes that allow for the receipt, storage, handling and inspection of fissionable material and the development of advanced nuclear fuels.

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Hot Fuel Examination Facility

The Hot Fuel Examination Facility (HFEF) offers post- and interim-irradiation examination capabilities, both air and inert shielded hot cells, a transuranic glove box and a small reactor for neutron radiography and material irradiation.

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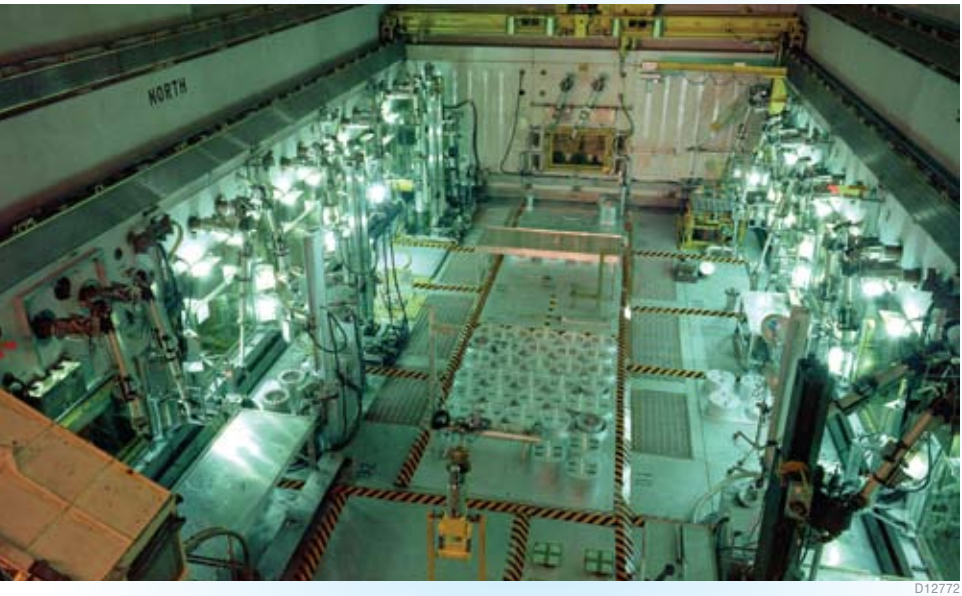

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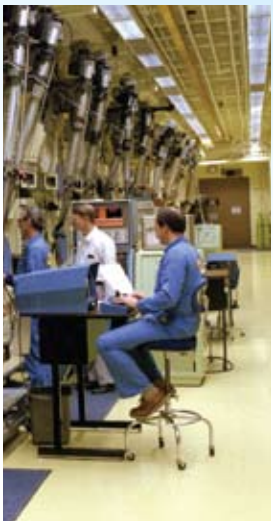

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Space and Security Power Systems Facility

The Space and Security Power Systems Facility (SSPSF) offers specialized capabilities such as vibration, mass properties and thermal vacuum testing required for its mission of assembling and testing radioisotope power systems.

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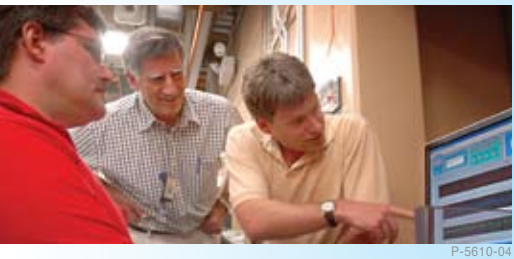

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Transient Reactor Test Facility

The Transient Reactor Test Facility (TREAT) is an air-cooled, thermal test reactor maintained in standby status to support radioisotope dispersal device exercises, recovered spent fuel storage and potential future transient testing needs.

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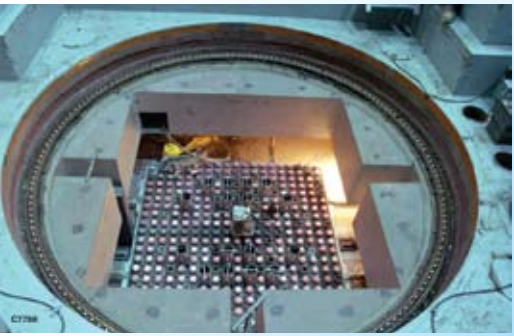

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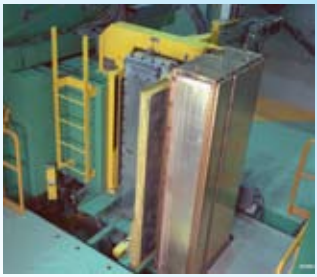

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In-Town Facilities

The Research and Education Campus is the collective name for INL's administrative, educational, technical support and computer facilities in Idaho Falls, as well as in-town laboratories where researchers work on a wide variety of advanced scientific research and development projects. The campus name reflects the lab's connection to university and energy research.

Though the campus includes numerous office, lab and support facilities, the ones of greatest visitor and guest-researcher interest are the Bonneville County Technology Center, the Center for Advanced Energy Studies, the Engineering Research Office Building, the Information Operations and Research Center, the INL Research Center and National and Homeland Security's University Boulevard 2 and 3.

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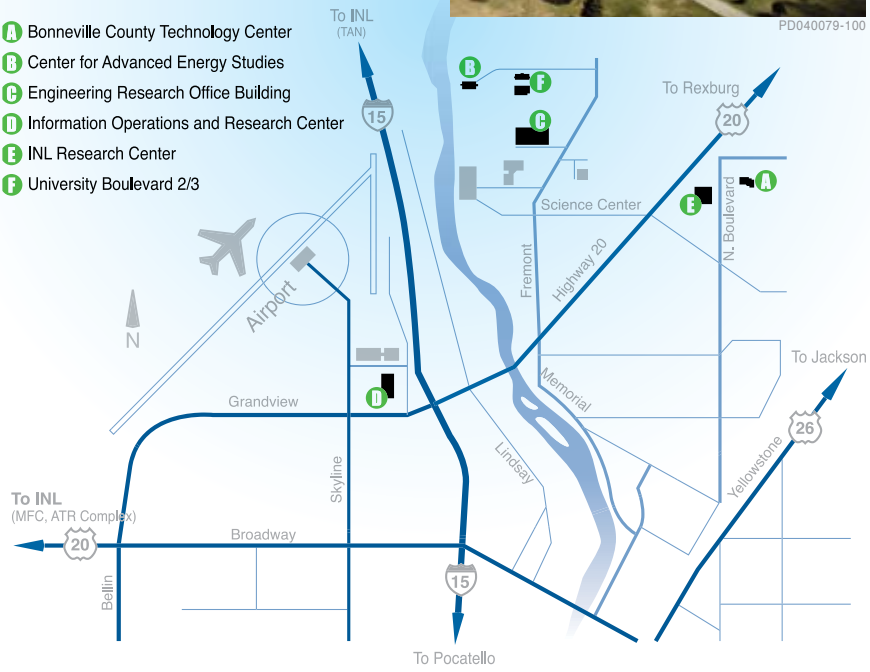
INL Idaho Falls Facilities

- A Bonneville County Technology Center
- B Center for Advanced Energy Studies
- C Engineering Research Office Building
- D Information Operations and Research Center
- E INL Research Center
- F University Boulevard 2/3



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Bonneville County Technology Center

The Bonneville County Technology Center (BCTC), located across the street from the INL Research Center, offers a blend of low- and high-bay work areas and wet and dry lab space and accommodates refinement of technologies that are closer to commercialization.

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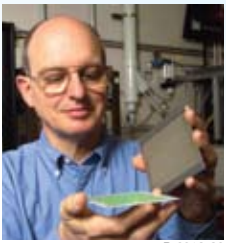

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Center for Advanced Energy Studies

The Center for Advanced Energy Studies (CAES) is a new 55,000-square-foot office and laboratory resource – owned by the state of Idaho, managed by Idaho State University and leased by INL – that supports collaboration among INL researchers, industry and university faculty and students.

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Engineering Research Office Building

The Engineering Research Office Building (EROB) is a three-story, 165,000-square-foot facility that houses INL's executive offices and general office space for the engineers, scientists and technicians performing engineering design and research for INL.

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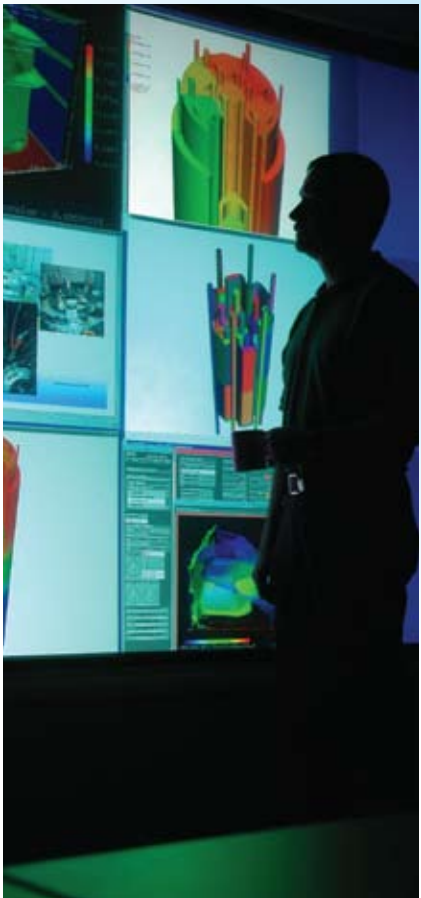

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Information Operations and Research Center

The Information Operations and Research Center (IORC) is a secure, single-story building that serves as a centralized location for industry, vendors and government agencies to work together to reduce cyber vulnerabilities in control systems.

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INL Research Center

The INL Research Center (IRC) houses more than 60 laboratories and was designed to allow easy lab space modification as research needs change over time. Scientists and engineers at the IRC conduct research in a number of different fields including physics, materials science, chemistry, biotechnology and prototype engineering.

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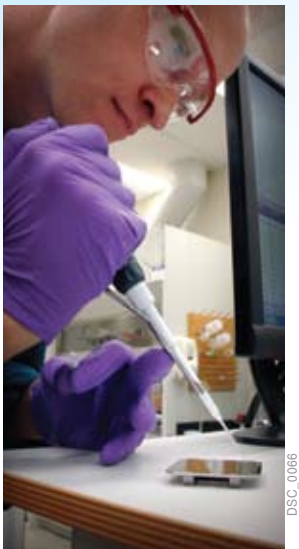

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University Boulevard 2 and 3

University Boulevard 2 and 3 (UB2/3) are the twin two-story gray-and red-trimmed buildings north of the Engineering Research Office Building. They comprise more than 67,000 square feet of office and high-bay engineering space that enable the lab to support a wide range of work-for-others customers including programs for the departments of Defense and Homeland Security.

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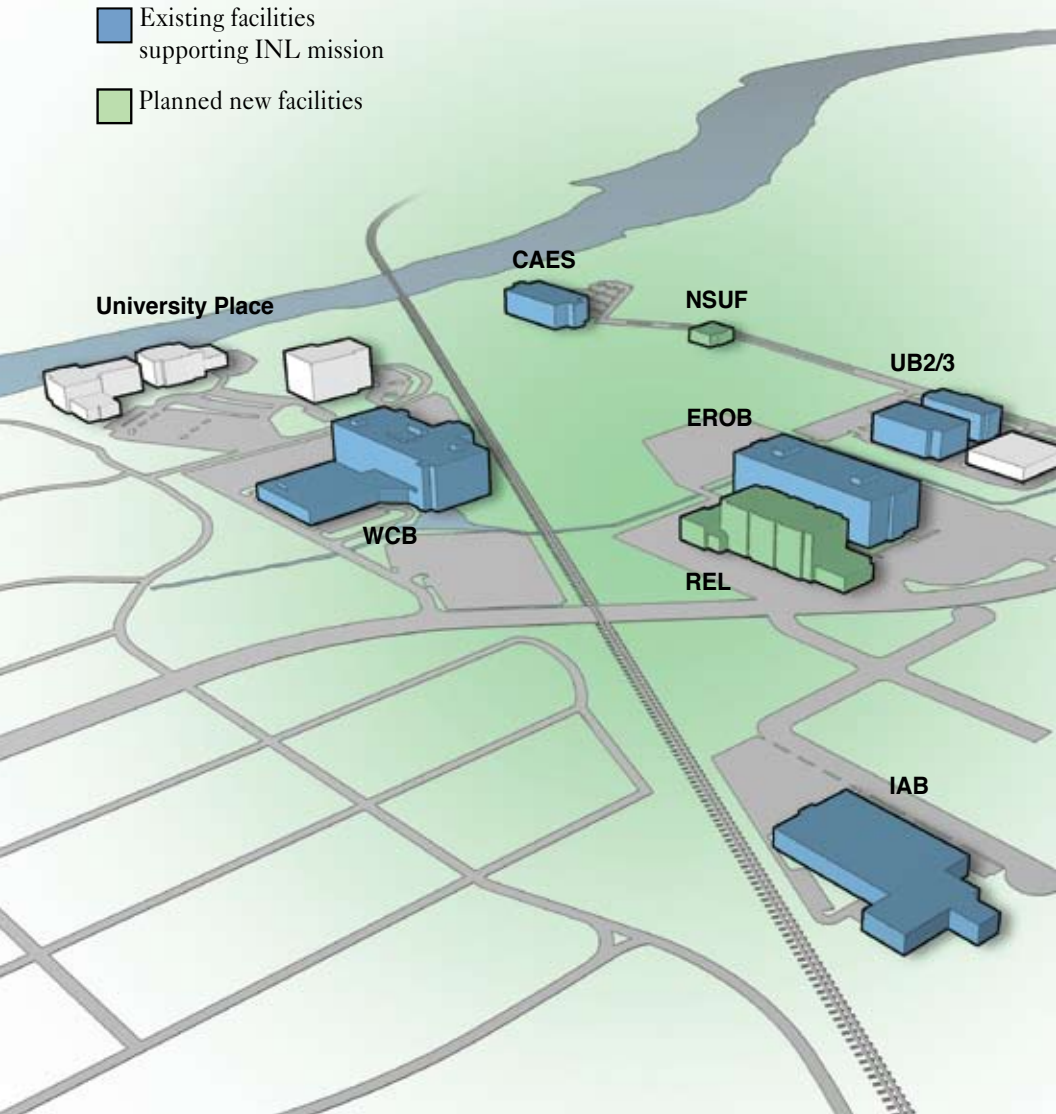
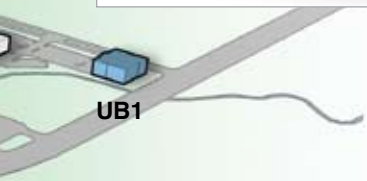
Research and Education Campus Vision



View to the Future

While facilities already in place enable the lab to carry out its current mission assignments, those national-priority assignments planned for the future will require new, forefront research facilities. These facilities, together with supporting infrastructure and leading-edge management systems will allow INL to deliver world-class research while operating to the highest standards of safety, environmental protection and efficiency for decades to come.



Research and Education Laboratory

The Research and Education Laboratory (REL) will house multiple labs to support consolidation into a more centralized campus. This facility will contain 68,000 square feet of laboratory space, a 350-seat auditorium, offices, and shipping and receiving areas.

U.S. DEPARTMENT OF
ENERGY

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